ABSTRACT

The image sensing system includes integrating charge in an image sensor array; transferring the charge out of the image sensor array; converting the charge to a digital signal; combining the digital signal with digital data stored in a memory device to form an integrated signal; storing the integrated signal in the memory device such that the integrated signal becomes the digital data; and repeating the above steps multiple times during a frame time cycle. This system allows for very small pixel sizes in the image sensor. The digital integration process eliminates the need for using correlated double sampling circuits to reduce kTC noise, and is also beneficial for reduction of analog-to-digital digitization noise.